

# TrueAllele® Technology

## Cybergenetics June/July 2015 Newsletter

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#### Post-Gazette Sunday feature on how TrueAllele helps solve incest rape

Crime laboratories can find DNA mixtures of two or more people challenging to interpret. But many labs just give up when those mixed DNA people are related to each other. This means that critical DNA evidence from father-daughter rape crimes is often not used for criminal justice.

Science reporter David Templeton [writes](#) how prosecutors are now using Cybergenetics TrueAllele data analysis to separate incest rape DNA mixtures into the genotypes of father and daughter, yielding strong match statistics that help obtain convictions. Allegheny County District Attorney Stephen A. Zappala called the technology "revolutionary," saying "It convicts the guilty and exonerates those not responsible for the crime."

A New York father who had raped his daughter for seven years pleaded guilty based on TrueAllele match results, and received consecutive sentences in the Bronx and Westchester. Cybergenetics scientist Dr. Mark Perlin testified about TrueAllele mixture statistics in a Pittsburgh trial where the Pennsylvania father was sentenced to serve 40 to 80 years.

#### New JFS paper validates TrueAllele on up to five unknown contributors

A new open-access TrueAllele article is now [available](#) at the *Journal of Forensic Sciences* website. "TrueAllele Genotype Identification on DNA Mixtures Containing up to Five Unknown Contributors" was jointly written by Cybergenetics and the Kern Regional Crime Laboratory in Bakersfield, California. This is the sixth peer-reviewed validation paper that demonstrates TrueAllele reliability for DNA mixture interpretation.

The authors tested both high- and low-template DNA mixtures of known randomized composition containing 2, 3, 4 and 5 contributors. They established TrueAllele's sensitivity, specificity, and reproducibility using likelihood ratios. They found the system's behavior to be relatively invariant to DNA amount or contributor number. Contributor number was not important, once a sufficient number was considered.

#### STEM teenagers learn about the math and science of TrueAllele

Twenty high school summer campers from *Grow a Generation* [visited](#) Cybergenetics to learn about the TrueAllele forensic mixture analysis technology. In their 90 minute *2015 STEM Careers Tour* of our Pittsburgh facility, chief scientist Dr. Mark Perlin explained how TrueAllele works. Chocolate cake was served.

Dr. Perlin introduced Bayes probability as the way scientists update their beliefs based on data. He described the STR technology used to generate DNA data. He showed how genotypes are inferred objectively from data using Bayes law, and are then compared to calculate match statistics. The mixture evidence example came from the Boston Marathon bombing case, where TrueAllele was used to separate and identify two brothers found in a five-person DNA mixture inside a glove.

### Cybergenetics presents TrueAllele solution at international NIST meeting

The National Institute of Standards and Technology held an *International Symposium on Forensic Science Error Management: Detection, Measurement and Mitigation* in Washington, DC. Cybergenetics scientist Dr. Mark Perlin gave a talk on "Objective DNA Mixture Information in the Courtroom: Relevance, Reliability and Acceptance." The narrated YouTube movie (live audio & slides) is [viewable](#) from Cybergenetics website.

The talk begins with Bayes law as the way to update belief based on data. Dr. Perlin described DNA mixtures and STR mixture data. He showed how TrueAllele objectively infers genotypes from data using Bayes law, and then compares them without bias to calculate match statistics. Legal relevance and reliability issues were discussed. The mixture evidence example came from a Baltimore trial, where TrueAllele was used to help convict Maryland rapist Nelson Clifford.

### TrueAllele mixture analysis instrumental in Indiana innocence case

The Indiana Court of Appeals [granted](#) Darryl Pinkins' petition for successor post-conviction relief. Pinkins was convicted of a 1989 rape in Lake County. Frances Lee Watson, Director of the *Wrongful Conviction Clinic* at Indiana University School of Law, filed the petition.

Cybergenetics *pro bono* TrueAllele work for the Innocence Project showed there were five people (unrelated to the accused men) in the DNA evidence as major or minor contributors. Watson used these TrueAllele results to persuade the Indiana Court of Appeals that the crime scene evidence did not contain Pinkins' DNA.

### Cybergenetics scientist testifies in Australia trial about mixture of relatives

In New South Wales, Robert Xie is [accused](#) of bashing his brother-in-law Norman Lin, Lin's wife Lily, their two young boys, and Lily's sister to death with a hammer-like object in their home. The Sydney court has heard how a stain found by forensic investigators on Xie's garage floor could be a DNA mixture containing blood from these five related victims.

Cybergenetics TrueAllele technology was used in this case to resolve DNA mixtures of relatives. By separating a mixture into genotypes, TrueAllele replaces complex statistical arguments with simple comparisons that juries can understand. Cybergenetics scientist Dr. Mark Perlin was in Sydney this June testifying about TrueAllele match results on DNA mixture evidence.

### Virginia man pleads guilty to killing elderly Colonial Heights couple

Joseph and Evelyn Bland, Colonial Heights residents aged 84 and 80, were found dead in their Virginia home in January of 2011. Matthew Brady was arrested for the crime a week later. DNA potentially linked items stolen from the home to Brady.

The 2010 SWGDAM guidelines had introduced a second interpretation threshold that led to Virginia's [reevaluation](#) of 375 cases with DNA mixture evidence. Cybergenetics issued TrueAllele [reports](#) on 72 of those cases, including the Bland homicide. Cybergenetics provided match statistics for DNA mixtures from a stolen gold earring and hundred dollar bills, as well as Brady's T-shirt.

Brady challenged TrueAllele's admissibility in a weeklong July hearing held two years ago. At the end of that week, Judge Sharrett ruled TrueAllele to be reliable under Virginia's Spencer-Frye standard, and [admitted](#) the DNA results into evidence. After two further years of motions and delay, Brady [pleaded](#) guilty to two counts of first-degree murder and two counts of robbery.

### Recent TrueAllele criminal case outcomes

Recovering "inconclusive" DNA mixture evidence through TrueAllele computer interpretation generally leads to guilty pleas. In Louisiana, Brian Williams pleaded guilty to homicide. In Pennsylvania, Delmingo Williams received 3-7 years on gun charges, and Lauren Peak pleaded guilty to robbery.

Dr. Mark Perlin testified in Schenectady at jury trials about TrueAllele match results for complex DNA mixtures on handguns. New Yorker Sylvester Young was found [guilty](#) of homicide. Nahkiem Fields was sentenced to 12 years for weapons violations and assault.

Maryland serial rapist Nelson Clifford was [sentenced](#) in Baltimore to 31 years and 6 months for sexual assault and theft. TrueAllele match statistics pinned his DNA to clothing found in the victim's home.

## Announcements

Congratulations to Supervising Deputy District Attorney Cynthia Zimmer for receiving an award from the Kern County Law Enforcement Foundation for her work on the Billy Ray Johnson "East Side Rapist" [case](#) in Bakersfield, California. TrueAllele results on eight "inconclusive" DNA mixtures found across three crime scenes provided key physical evidence in that case.

Virginia Department of Forensic Science Lisa Schiermeier-Wood's webinar on "Practical Aspects of the Implementation of TrueAllele Casework" given on June 18th is now [posted](#) on Cybergenetics website.

Cybergenetics will be attending the International Homicide Investigators Association ([IHIA](#)) meeting in Washington, DC starting August 16th. We will also have a booth at the International Symposium on Human Identification ([ISHI](#)) meeting in Grapevine, Texas the week of October 12th. See you there!

Cybergenetics would like to introduce our new National Sales Manager, Jeffrey Robinson. You will be hearing more from him in the coming months.

The TrueAllele Cloud is now being used regularly for student training and system evaluation. The Cloud also provides TrueAllele services for extra capacity, trial discovery, DNA databases, distributed delivery, protocol assessment, university courses, and validation studies. No TrueAllele hardware required. Contact [Jeffrey](#) for more information about getting started with TrueAllele on the Cloud.

Cybergenetics offers a "no cost" TrueAllele evaluation of challenging or "inconclusive" DNA mixtures from criminal cases. To find out the real identification information in your DNA evidence, contact [Jeffrey](#).

Sincerely,

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